Determinants of Deposit-Insurance Adoption and Design*

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Abstract: This paper seeks to identify factors that influence decisions about a country's financial safety net, using data on 170 countries covering the 1960-2003 period. Specifically, we focus on how outside influences, economic development, crisis pressures, and political institutions affect deposit-insurance adoption and design. Controlling for the influence of economic characteristics and events such as macroeconomic shocks, occurrence and severity of crises, and institutional development, we find that pressure to emulate developed-country regulatory frameworks and power-sharing political institutions dispose a country toward adopting design features that inadequately control risk-shifting.

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1. Introduction

Every country offers implicit deposit insurance, no matter how vigorously they may deny it. This is because whenever a large or widespread banking insolvency occurs, pressure for governmental relief of at least some bank stakeholders becomes politically too intense to resist, even if no explicit deposit insurance system is in place. Adopting a system of explicit deposit insurance does not eliminate implicit guarantees but simply supplements them with a system of guarantees that contractually link the capitalization of a country's private banks to the credit and tax-collecting capacity of their chartering government.

When we code a map of the world as in Figure 1 for the year 2003, we see that countries have no explicit deposit-insurance scheme (EDIS). However, the 1990s saw a rapid spread of EDIS in the developing world. In January 1995 only 49 countries had an EDIS. However, by yearend 2003, this number had surged to 87 countries, an increase of almost 80 percent. Although a significant share of the surge can be attributed to transition countries of Eastern Europe that were "encouraged" to adopt deposit insurance by the EU Directive on Deposit Insurance, recent adopters can be found in all continents of the world.

This paper seeks to determine what factors influence safety-net design, focusing on a country's decision to adopt an EDIS and whether these same factors affect risk-shifting controls. Our study examines data for 170 countries over 1960-2003. Our goal is to identify and interpret how outside influences interact with domestic institutional and political factors, both in adopting deposit insurance and in crafting the character and cost-effectiveness of the particular scheme a country adopts.

Our interest in these questions stems from a suspicion that the spread of explicit deposit insurance schemes across countries generates a presumption that, even when poorly designed, an EDIS embodies a standard of best practice that is worth copying. We hypothesize that, in some

countries, the restraining influence of internal economic and political determinants may be undermined by a desire to "emulate" developed-country safety-net arrangements without adequately tailoring the design features to differences in their public and private contracting environments. To test this hypothesis, we estimate models of deposit-insurance adoption and design that enter proxies for outside pressure alongside a battery of domestic determinants of regulatory decisions. Starting in the 1990s, IMF crisis-management advice recommended erecting an EDIS as a way either of containing crises or of formally winding down crisis-generated blanket guarantees (Folkerts-Landau and Lindgren, 1998; Garcia, 1999). This leads us to test the complementary hypothesis that outside international pressure—i.e., an emulation effect—might adversely influence design decisions in countries that experience a systemic crisis.

A particular focus of this paper is to explore how cross-country differences in political systems affect decisions to adopt and design an EDIS. The presence of an EDIS and how well it is designed affects many constituencies, especially banks, depositors, creditors, specialized bureaucracies, and taxpayers. Because individual constituencies have conflicting interests, the political process governing adoption and design decisions can be complex. Economists presume that political decisionmaking promotes public and private interests. Purely public-interest theories of regulation expect government interventions to serve society as a whole (Joskow and Noll, 1981). Public-interest rationales for deposit insurance focus on protecting small, uninformed depositors and assuring the stability of the banking system (Diamond and Dybvig, 1983).

Purely private-interest theories portray the public interest as an amusing fiction. Between these extremes, theories of incentive-conflicted intervention conceive of regulatory decisions as the outcome of interest-group competition, in which well-organized or powerful groups compete with voters to pressure public-spirited, but opportunistic politicians and regulators for regulatory

interventions that authorize sponsoring groups to capture rents from other sectors (Stigler, 1971, Peltzman, 1976, Becker, 1983).[1]

Deposit insurance is traditionally advocated by risky banks because they can opportunistically exploit loopholes in the deposit-insurance system to extract net subsidies from taxpayers and safer banks. In the United States, lobbying for deposit insurance with generous design features has been characterized as rent-seeking behavior (Kroszner, 1998). For example, Calomiris and White (1994) argue that federal deposit insurance benefited predominantly smaller and poorly diversified unit banks and that, had not the Great Depression reduced confidence in the banking system as a whole, their pleas for federal insurance could not have overcome the opposition of politically stronger large banks. Kane and Wilson (1998) show that, in the face of the Great Depression, large banks' wish list changed and that large-bank share prices benefited greatly from introducing deposit insurance precisely because depositors had lost confidence in banks of all sizes.

Especially in the financial-services industry, political competition is strong. For this reason, it is natural to suppose that differences in political systems would influence safety-net design. Features of a country's private and public contracting environments have been shown to be important in deposit-insurance adoption and design (Demirgüç-Kunt and Kane, 2002). Financial institutions regularly lobby for "reforms" that promise to increase their franchise value (Kroszner and Stratmann, 1998). When a country's political system is more democratic, the voices of special interests can more easily be heard. This leads us to hypothesize that political power sharing makes EDIS adoption and subsidy-generating design features more likely.

In testing this hypothesis, candidate economic control variables include macroeconomic conditions and variation in the ownership structure of the banking system (as proxied by state-

[1] See Kroszner and Strahan (2001) for a more detailed discussion of the alternative political-economy views of

owned banks' market share). To establish the robustness of our results, we experiment with a variety of statistical methods and alternative indices of economic, political, and cultural influences.

A long literature analyzes the benefits and costs of explicit deposit insurance and explores theoretically the challenges of designing an optimal deposit-insurance system.[2] More recently, a complementary body of empirical research has emerged. Using a cross-country dataset, Demirgüç-Kunt and Detragiache (2002) and Demirgüç-Kunt and Huizinga (2004) study how EDIS design features affect banking-system fragility and market discipline. In poor institutional settings, generous design features tends to destabilize the banking system and to undermine market discipline. Hovakimian, Kane and Laeven (2003) and Laeven (2002) show that weak institutional environments undermine deposit-insurance design. Cull, Senbet and Sorge (2004) produce evidence that, in weak institutional environments, an EDIS retards financial development rather than fosters it. Looking only at crisis countries, Honohan and Klingebiel (2003) and Kane and Klingebiel (2004) show that blanket deposit-insurance guarantees – when adopted as a crisis-management strategy – increase the fiscal cost of resolving distress without reducing either the cumulative output loss or the duration of the crisis.

Laeven (2004) studies how political processes influence coverage levels across countries. We extend this analysis by simultaneously modelling the adoption decision and several other design features. In the process, we compile a panel data set of evolving design features. The novelty of our paper lies in: (i) providing cross-country evidence on the common determinants of EDIS adoption and design; and (ii) updating and extending the deposit-insurance dataset developed in earlier studies, tracking changes in EDIS design across time in each country.

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deposit insurance.

[2] See for example, Diamond and Dybvig (1983), Chari and Jagannathan (1988), Kane (1995), Calomiris (1996), Bhattacharya et al. (1998), and Allen and Gale (1998).

High-income, institutionally more advanced countries and those that experience a financial crisis are also more likely to adopt an EDIS. Outside influences prove especially important in the adoption decision, particularly during crisis periods. Even when we control for income and institutional quality, external pressures and internal politics play significant roles. Countries with more-democratic political systems prove more likely to adopt an EDIS and to incorporate inadequate risk controls, all the more so if adoption occurs during or in the wake of a crisis.

The rest of the paper is organized as follows. Section 2 reviews the dataset and the sources used to construct it. It also presents summary statistics for all included variables. Section 3 explores single-equation models of the adoption decision. Section 4 incorporates a baseline adoption equation into simultaneous models of safety-net design. Section 5 summarizes our findings and explains their policy implications.

2. Data

Our goal is to investigate the extent to which regression methods can explain whether and when a country installs a system of explicit deposit insurance and, if so, how well that system is designed. To this end, we construct a unique dataset covering all countries that have adopted explicit deposit insurance through yearend 2003, relying on official country sources and information provided by World Bank country specialists.

Our set extends the Demirgüç-Kunt and Sobaci (2001) database in two ways: first, we update the endpoint to 2003 to include data on recent adopters; second, we create a time-series dataset of individual-country design features. We compile data on coverage, not only for the year 2000 but for every year in which an EDIS existed. For example, coverage levels in the United States have been revised five times: from US$ 5,000 at adoption in 1934, to US$ 10,000

in 1950, to US$ 15,000 in 1966, to US$ 20,000 in 1969, to $40,000 in 1974, and to US$ 100,000 since 1980.

Table 1 partitions 181 sample countries for which we have per-capita income data into four income groups and shows that the propensity to adopt an EDIS rises with income. Table 2 lists adopting countries and the year their EDIS was installed.

Table 3 lists the design features our dataset covers and the country characteristics our regression experiments employ. The unit of observation is a country-year. The table presents summary statistics for all variables. For each variable, detailed definitions and sources are provided in Appendix Table 1.

In studying deposit-insurance adoption and design, the number of country-years to be sampled is an element of research strategy. One natural starting point is 1934, when the U.S. Federal Deposit Insurance Corporation opened its doors. If we begin in 1934, the maximum sample size is 181 x 40 = 7,240. Later starting dates are more attractive because we want to examine whether and how the occurrence of a financial crisis might influence deposit-insurance adoption and design. As it happens, a cross-country dataset on crises (Caprio and Klingebiel, 1996) begins in 1970, although it is thought to be more reliable after 1975. If we begin in 1975, the maximum sample size is 181 x 29 = 5,249. For the adoption models we fit, coefficient estimates prove much the same whether we start the clock at 1934, 1970, or even 1980. Of course, because observations are missing for some explanatory variables in many countries, the number of usable observations is much less than these maximum values. The usable sample increases markedly when we restrict the determinants of EDIS adoption and design to measures of inflation, per capita GDP and GDP growth.

The first column of the first panel of Table 3 lists a series of endogenous deposit-insurance design features. The mean value of the EDIS indicator variable, *Deposit insurance,*

states the proportion of country-years in which the countries in our sample included explicit deposit guarantees in their safety net. This turns out to be 17 percent, since many countries adopted EDIS relatively recently. The mean value of indicator variables for specific design characteristics tells us what proportion of *installed schemes* incorporates each particular characteristic. All variables are constructed so that higher values indicate an increased exposure to risk shifting. Higher values indicate that, according to the empirical literature, moral hazard is less effectively controlled by that particular design feature. Indicator variables take the value one: if the administration is publicly managed (*Administration*), if membership is voluntary (*Membership*), if foreign currency deposits and interbank deposits are covered (*Foreign currency deposits* and *Interbank deposits*), if there is no coinsurance (*Coinsurance*), if a permanent fund exists (*Permanent fund*), and if funding comes from only public sources (*Funding*). The last two endogenous variables are: (1) the EDIS coverage ratio (*Coverage ratio*), which we define as the ratio of the maximum insured value of individual account balances to per-capita GDP; and (2) a proposed overall "moral hazard index" (*Moral hazard*), which we represent by the first principal component of the variance-covariance matrix for the coverage ratio and indicator variables for the six other features.

We represent outside influences in several different ways. *External Pressure* is a dummy variable that takes the value one for the years 1999 on. In 1999, the IMF published a best-practice paper on deposit insurance and its design, recommending explicit deposit insurance for developing countries. The World Bank also recommended explicit deposit insurance for specific developing countries during the sample period. *World Bank Loan* is an indicator variable that moves from zero to one for individual countries starting in the year the World Bank began an adjustment lending program that entailed EDIS installation. European Union directives also encouraged deposit-insurance adoption. To capture this effect, we deploy two indicators: *EU*

Directive and *EU Candidacy*. In 1994, the EU's directive encouraging countries to adopt deposit insurance came into force. For EU member countries, *EU Directive* is set to one from 1994 on, but is zero otherwise. Since the directive was aimed at candidate countries, *EU candidacy* takes the value of one from 1994 on for EU candidate countries only and is zero otherwise. Finally, we introduce a variable, *Emulation*, which is the interpretive name we assign to the nonlinear trend that tracks the proportion of countries having EDIS systems at each point in time. As more and more countries adopt an EDIS, Emulation increases in value. We interpret this ratio as a proxy for the extent to which deposit insurance might be believed to be a universal best practice. Our regressions use *External Pressure* as the main measure of outside influence, but check the robustness of our results with the alternative indicators.

We also investigate whether and how the occurrence and fiscal cost of a financial crisis might affect the timing and character of deposit-insurance decisions. *Crisis dummy* moves from zero to one for countries that are experiencing a crisis in a given year. *Post-crisis adoption* variable is an indicator variable that identifies countries that adopted EDIS up to three years after a crisis. *Fiscal cost/GDP* expresses the fiscal cost of resolving a banking crisis as a percentage of GDP. This variable lets us explore how crisis severity might influence safety-net decisions.

To represent the political character of a country, we focus on *Executive constraints*. This index measures the extent to which institutionalized constraints on the decision-making powers of the country's chief executive create other "accountability groups." The index ranges from 1 to 7. Higher values indicate increased restriction on executive authority. As alternative political indicators, we also experiment with *Polity score*, *Political competition*, and *Democratic accountability*. *Polity score* ranges from –10 to 10, with negative scores assigned to countries that are autocracies and positive values to democracies. *Political competition* ranges from 1 to 10, with higher scores representing increased political competition. Finally, *Democratic*

accountability measures how responsive the government is to its people and whether changes occur peacefully or violently. It ranges from 0 to 6, with values increasing with the extent of democracy.

Macroeconomic variables controlling for differences in the economic environment include *Real interest rate*, *Inflation*, *GDP growth*, *Terms of trade change*, and *Credit growth*. Movement in these variables captures the extent of internal and external macroeconomic shocks the countries experience. *Real interest rate* and *Inflation* are defined as the annual rates of real interest and inflation, respectively. *GDP growth* is the growth rate in real GDP and *Credit growth* is the growth rate in the amount of real credit extended to the private sector by financial intermediaries. *Terms-of-trade change* states the annual percentage change in terms of trade.

To control for the effects of cross-country variation in the extent to which the government is a bank owner, we include a government-ownership ratio. *Government ownership* states the percentage of government ownership in the banking system. We also control for the importance of banks in the economy by including *Bank Deposits/GDP*, which is total deposits in banks as a share of GDP. When bank deposits represent a larger share of GDP, banks might prove more powerful and better able to lobby for deposit-insurance subsidies.

To measure the institutional development of the country, we use *GDP per capita*, and indices for *Bureaucracy*, *Corruption*, and *Law and Order*. *Bureaucracy* ranges from 0 to 4, increasing in the strength and quality of the bureaucracy. *Corruption* measures how well bribery is controlled in the country. It ranges from 0 to 6, with low scores indicating high levels of corruption. *Law and Order* expresses the quality of country's legal system and rule of law. It ranges from 0 to 6, where high scores indicate a high level of law and order.

Table 4 reports the correlation matrix of deposit-insurance variables and country characteristics across the years and countries for which data are available for both members of

each pair of variables**.** We find that the presence of explicit deposit insurance is positively associated with economic development (as measured by GDP per capita), external-pressure indicators, crisis experience, and constraints on executive authority. For countries with explicit insurance, we find that coverage levels and exposures to moral hazard are higher when per capita GDP and constraints on executive authority are low, and during periods of increased external pressure. Coverage levels prove higher in countries where government ownership of banks is more extensive. Because we expect the same variables to influence adoption and design, design decisions must be modelled simultaneously with adoption. Because it ignores potential selection bias, Table 4 probably overstates the bivariate correlation of deposit-insurance characteristics with country variables. To avoid selection bias, regressions seeking to explain design decisions are estimated simultaneously with an EDIS adoption equation whose relatively parsimonious specification is based on evidence generated by first fitting alternative single-equation models of the adoption decision.

3. Empirical Results of the Adoption Decision

A. Logit Models of the Adoption Decision

Tables 5 through 9 report on stepwise regression experiments aimed at developing a benchmark model of the adoption decision. The first-cut model appears in the first column of Table 5. It relates the indicator variable, *Deposit insurance,* to six macroeconomic variables: *Real interest rate*, *Inflation*, *GDP growth*, *Credit growth*, *Terms of trade*, and *GDP per capita*. This experiment establishes the baseline extent to which macroeconomic variables alone can explain the presence or absence of explicit deposit guarantees. Consistent with our preliminary analysis, *GDP per capita* shows the strongest influence. The second column shows that, except for *GDP per capita* and *Inflation*, the estimated influence of macroeconomic forces becomes

negligible when year dummies are introduced. This experiment also confirms that individual-country adoption decisions are significantly influenced by the spread of these schemes across countries.

The third column steps in the *External Pressure* indicator. This variable proxies encouragement from international entities to install explicit insurance. As expected, *External Pressure* earns a significant and positive coefficient. The probability of adopting an EDIS increases after the IMF endorsed such schemes as best practice.

The other seven experiments in Table 5 make use of our preferred political variable, *Executive constraints*. The results indicate that political systems that more strongly constrain their executive are more likely to adopt an EDIS. Regression 5 includes *Executive constraints* with *External Pressure* and shows that both are significant. Columns 6 and 7 show that coefficient values and significance patterns found for the *GDP per capita*, *External Pressure* and *Executive constraints* are virtually unaffected by moving the starting date of the study forward either to 1970 or to 1980.

Column 8 drops three consistently insignificant macro variables whose spotty availability constrains the usable size of our sample. This relatively parsimonious model also serves as the "benchmark" model for subsequent regression experiments. This experiment indicates that inflation loses significance in the enlarged sample, while the coefficients of *GDP per capita*, *External Pressure*, and *Executive constraints* remain much the same and model performance is enhanced.

The logit models estimated in columns 1 through 8 assume that a country makes each year a decision about changing its deposit-insurance status.[3] However, once explicit insurance is in place, countries rarely jettison it. In column 9, we investigate—by dropping all post-adoption

observations—how much including the period after the adoption decision biases estimates. Coefficients of interest remain significant, but their magnitude declines.

To communicate the economic significance of these findings and to sharpen their interpretation, it is helpful to calculate the marginal influence each regressor has on the probability of adoption. Using the mean of each explanatory variable in regression 8, Column 10 reports each variable's marginal effect (and standard error). For example, GDP per capita is expressed in thousands of U.S. dollars. Its coefficient in column 10 implies that, on average, a US$ 1000 increase in GDP per capita brings about a 0.01 increase in adoption probability. It is particularly instructive to calculate the marginal effect of a one-standard-deviation increase in each regressor. A one-standard-deviation increase in GDP per capita (or US$ 8660) is associated with a 0.08 increase in the probability of deposit-insurance adoption; a one-standard-deviation increase in emulation (or 0.32) is associated with a 0.09 increase in the probability of deposit-insurance adoption; and a one-standard-deviation increase in executive constraints (2.34) is associated with a 0.10 increase in the probability of deposit-insurance adoption. Relative to the 0.22 mean value the deposit-insurance variable in the column-10 sample, these incremental effects are substantial. This exercise shows that one standard-deviation increases in *GDP per capita*, *Executive Constraints*, and *Emulation* have similar impacts on adoption probability.

Table 6 introduces alternative proxies for external pressure. Panel A shows that whatever measure we use—*World Bank Loan, EU Directive/Candidacy, Emulation*—outside forces significantly influence adoption decisions. Indeed, the last column shows that, when entered together, IMF, *World Bank*, and *EU Directive* influences are each significant.[4] Panel B replicates these results, controlling for a linear time trend. Even in the presence of this

[3] However, we do allow for correlation among errors for each country by estimating Logit using clustered errors at the country level.
[4] Because Emulation and External Pressure are very highly correlated at 80 percent, we exclude Emulation from Column 8.

uninterpreted trend, pressure from the three multinational organizations significantly influences adoption decisions. In specifications that include the trend, *World Bank Loan* and *EU Directive* remain significant at conventional levels, while *External Pressure* and *Emulation* prove marginally significant at ten percent.

Table 7 investigates whether and how financial-crisis experience, bank ownership, institutional quality, and bank dependence affect the adoption decision. The experiment depicted in the first column supports the hypothesis that countries that experience a crisis are more likely to adopt an EDIS. The second column confirms the hypothesis that an EDIS is likely to be adopted as a way of *unwinding* a crisis, while the third column shows that the odds of adoption increase with the fiscal burden the particular crisis poses.[5]

Columns 4 and 5 of Table 7 explore whether EDIS adoption and government ownership are substitute ways of protecting depositors. The datasets used to generate the ownership data cover a much smaller number of countries. *Government ownership* and *privatization* prove insignificant, but their inclusion reduces the coefficient assigned to per-capita GDP. Although *Government ownership* is itself a trend variable in many countries,[6] the size and significance of the *External Pressure* coefficient prove higher in this specification than in the benchmark model.

Columns 5 to 7 of Table 7 further explore the impact of institutional quality. By institutional quality, we mean contractual enhancements generated by the institutional environment in which banks and customers contract. Our benchmark specifications begin with *GDP per capita*, which is a widely recognized correlate of institutional quality. We insert

[5] Demirgüç-Kunt and Detragiache (2002) show that bank crisis probabilities increase with the adoption and generous design of an EDIS. Their results are robust to: (i) restricting the sample to countries that only adopted deposit insurance previous to crises and excluding crisis periods, and (ii) estimating a two-equation model where the emulation variable serves as the instrument for the first-stage adoption model. Thus, while EDIS is more likely to be adopted as a result of crises, adoption directly increases fragility.

[6] In 1970, 29 countries out of 92 (31.5%) had more than 90% government ownership of banks. In 1995, 11 countries out of 92 (12.0%) had more than 90% government ownership of banks. In 1970, only one country (India)

Bureaucracy, *Corruption*, and *Law and Order* into the model to investigate whether variation in these indices affects the adoption decision. We find weak evidence that more-corrupt countries are more likely to adopt deposit insurance, but neither of the other institutional variables enter significantly. Importantly, *External Pressure* and *Executive constraints* remain positive and significant even after controlling for institutional quality.

Finally, column 8 controls for the importance of banks in the economy by introducing *Bank deposit/GDP*. One might suppose that, when banks play a more important role, risky banks more effectively might promote their interests. This hypothesis is rejected. The relevant coefficient is insignificant and its inclusion does not affect the significance levels of other regressors.

Table 8 introduces alternative proxies for political power-sharing. Columns 2 and 3 replace *Executive constraints* with two alternative measures: *Polity score* and *Political competition*. Both variables come out of the University of Maryland's INSCR Program. The INSCR program covers more countries than the third index featured in the Table, which comes from the International Country Risk Guide (ICRG) database. Both INSCR variables show a similar effect: Countries with effective systems of political checks and balances are more likely to adopt an EDIS than countries in which political power is more concentrated. Each variable shows a positive and significant impact on the adoption decision. Introducing either one of them reduces the *GDP per capita* coefficient by about a standard error, but has a negligible effect on the coefficient of *External Pressure*. The last column introduces the ICRG's measure of *Democratic accountability*. This measure also enters significantly and reduces the *external pressure* and *per capita GDP* coefficients more than the INSCR indices.

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of the 29 countries with more than 90% government ownership of banks had an explicit deposit insurance system in place. In 1995, two of the 11 countries with more than 90% government ownership of banks had an EDIS.

Table 9 uses the baseline model to investigate how much the impact of *External Pressure* and *Executive constraints* varies across regions and country types. The first three columns investigate whether the European Union requirement that member countries adopt an EDIS might be responsible for the significance of *External Pressure*, *Executive constraints*, and *GDP per capita*. Although the coefficients of *GDP per capita* and *External Pressure* decline when EU countries are excised from the sample, their effects remain sizeable and significant. *Executive Constraints* shows a slightly larger effect in this sample. On the other hand, columns 4 to 6 show that deleting very small countries from the sample increases the coefficients of these three variables. Finally, the last three columns establish that introducing a fixed effect for each continent virtually halves the effect of variation in *GDP per capita*, intensifies the effect of *External Pressure*, and lessens the effect of *Executive constraints*.

These regression experiments strongly support a role for *External Pressure* and *Executive constraints* in EDIS adoption decisions. This finding is robust to numerous changes in specification, such as introducing proxies for crisis pressures, macro shocks, institutional quality, population size, and regional differences in culture. *GDP per capita*— a frequently used proxy for economic and institutional development— remains significant in alternative specifications and does not eliminate the significance of *External Pressure* and *Executive constraints*. The next section demonstrates that these conclusions are robust to the use of an alternative statistical method.

B. Hazard Models of the Adoption Decision

Another way to analyze the timing of adoption decisions would be to regress the duration of a country's stay in the non-EDIS state (state N) against subsets of the determinants we used in the logit models. The difficulty with this approach is that countries that are in state N at yearend

2003 would give incomplete (i.e., downward-biased or right-censored) data on the length of their stay.

Hazard models surmount this problem by focusing instead on the transitional probability of staying in state N for a spell of exactly t years, where results for t>43 can be extrapolated from the transitions observed. The hazard rate $\lambda(t)$ may be interpreted as the probability of country's leaving state N in year t, given that it was in state N when the year began. The logit models estimated in the previous section imply that this probability λ is a function of country characteristics as well as time.

As a robustness test, Table 10 fits a series of hazard-rate models that let us examine how different factors affect a country's probability of transitioning to an EDIS. The first three columns of the table estimate each of three widely used hazard models, using only the benchmark macro determinants identified in Table 5. The Cox procedure models the hazard rate as:

$$\lambda^{i}(t) = \lambda(t) \exp(\beta' x_i), \quad (1)$$

where x is any specified vector of potential explanatory variables. The exponential procedure imposes on (1) the restriction that $\lambda(t) = \lambda$. Finally, the Weibull model specifies that $\lambda(t)$ in (1) evolves as:

$$\lambda(t) = \lambda\alpha t^{\alpha-1}. \quad (2)$$

The evolutionary parameter α determines whether the hazard rate is increasing ($\alpha > 1$), decreasing ($\alpha < 1$), or constant ($\alpha = 1$) over time. High and significant values of α (which emerge in all of our Weibull specifications) denote positive duration dependence and can be interpreted as evidence of external influence or emulation. Because our dataset reduces to a cross section of durations when employing duration-model techniques, we compare alternative specifications of the hazard model (focusing specifically on the values of α) to investigate the

presence of external influence rather than estimating a time trend or including *Emulation* as an explanatory variable.

Because explanatory variables enter exponentially, the coefficients reported in Table 10 are the logarithms of the underlying relative hazard coefficients. The relative hazard coefficients can be calculated as the antilog of the reported coefficients. The exponent of each coefficient estimate shows the proportional increase in the hazard rate that occurs when the focal explanatory variable increases by one unit. Regression 3 may serve as an example.

GDP per capita is denominated in thousands of U.S. dollars. The results show that: If *GDP per capita* increases by one unit (i.e., by one-thousand dollars), then the hazard rate for adopting deposit insurance increases by exp(0.069) = 1.071 fold (or an increase of about 7 percent). This tells us that countries with higher *GDP per capita* are more likely to adopt sooner. On the other hand, countries with higher *Inflation* or more-rapid *GDP growth* are likely to delay deposit-insurance adoption, although these restraining effects are not statistically significant.

In regression 3, the estimated value of α is 4.49 (positive and significant). This tells us that the hazard function for adopting deposit insurance is increasing rapidly over our sample period 1934 – 2003. To see just how quickly, we can compare the hazard rates for the years 1980 and 2003. Focusing on the estimate of α in column 3, we find that for a typical country:

$$\frac{\lambda(Year\ 2000) = \lambda(66) = \lambda\alpha(\lambda 66)^{\alpha-1}}{\lambda(Year\ 1980) = \lambda(46) = \lambda\alpha(\lambda 46)^{\alpha-1}} = (66/46)^{\alpha-1} = (66/46)^{4.49-1} = 3.53.$$

This tells us that such a country is 3½ times more likely to adopt deposit insurance in 2000 than in 1980. This nonlinear trend approximates the *Emulation* effect that we estimate in our Logit specifications.

The first three columns of Table 9 indicate that all three procedures for estimating the hazard rate assign similar roles to the benchmarked macro variables, but only *GDP per capita*

shows a significant effect. The fourth column confirms that only the one macro variable is significant.

Columns five through eight use the Cox or Weibull procedure and expand the set of variables to include measures of government power-sharing and crisis experience. The significant positive values of α in the Weibull models support our contention that external influence is important: the likelihood of adoption (the "transforming event") at time t, conditional upon duration up to time t, increases over time. Among the external influence variables, *World Bank Loan*, *EU Directive* and *EU Candidacy* are still significant and positive confirming earlier results. *External Pressure* loses significance but as in the case of *Emulation*, its impact is actually captured by the evolutionary trend α.

The significance of the *Crisis dummy* confirms the hypothesis that EDIS is more likely to be adopted during crisis. Finally, the significantly positive sign captured by the government power-sharing variable *Executive constraints* and the fact that its inclusion reduces the impact of *GDP per capita* indicate that social capital plays an important role in adoption decisions: democratic countries are more likely to adopt an EDIS, confirming again our initial findings. The results are similar when using the Cox model rather than the Weibull procedure, except that the Cox model excludes the possibility of time variation in the hazard rate.

Table 11 reports out-of-sample predictions of the year of adoption for countries that had no deposit insurance by yearend 2002 – the end of our sample period. These estimates are based on the Weibull duration model in column 9, Table 10. We also report estimates of the number of years until each country without an EDIS can be expected to adopt deposit insurance given year 2002 circumstances. For a large number of countries, particularly poor countries in Africa, the model predicts adoption not until more than a decade from now. For example, for Zimbabwe the model predicts adoption in the year 2021. (In reality, Zimbabwe adopted deposit insurance

"prematurely" in the year 2003). Based on our model, one would have expected several other countries to already have adopted deposit insurance (for example, rich countries like Australia and New Zealand, but also China).

4. Explaining Deposit-Insurance Design

A credible EDIS builds and maintains depositor confidence even in dangerously fragile and broken banks. For this reason, the fairness and efficiency of a country's safety-net design may be measured by the extent to which design features promise to preserve the system's financial integrity without either subsidizing or penalizing bank risk-taking. Theories of interest-group interaction suggest that, in almost every country, society may count on bank clout and lobbying activity to curtail unfair and inefficient restrictions on bank risk-taking. However, these same theories suggest that, in many environments, weak and risky banks can use their clout to persuade authorities to subsidize risk (Laeven, 2004.)

In Table 12, we investigate how outside influences and the political system influence the generosity of the system design, controlling for macro shocks, crisis experience, and institutional development. By the "generosity" of a design feature, we mean the extent to which empirical evidence summarized in Demirgüç-Kunt and Kane (2002) indicates that its presence or size promotes bank risk-taking (i.e., moral hazard). We investigate decisions about the coverage ratio separately because: (i) coverage limits are is particularly important in controlling moral hazard, and (ii) compared to other design features, our time-series data on coverage is of better quality. However, to recognize that the particular combination of features chosen might mute or reinforce the impact of some of the others, we introduce a variable we call *Moral Hazard*, defined as the first principal component of the covariance matrix of the eight individual features listed in section 2. We also explore an alternative *Moral Hazard without coverage* variable that focuses

on design features excluding coverage. In constructing the covariance matrix, all design features are standardized to have a mean of zero and a standard deviation of one.

We estimate decisions about features in a two-stage Heckman selection framework. The first stage is an EDIS selection model, using regressors that represent forces whose significance was established in Sections II and III. We report both Heckman's two-step estimates and Maximum Likelihood (ML) estimates. In Panel A, the first and second-stage models have the same variables, while in Panel B we exclude the GDP per capita variable in the second stage equation for model identification purposes. Although not constrained to be the same across features, first-stage coefficients are virtually identical in all columns. Second-stage regressions incorporate a regressor (called the Heckman Lambda) that accounts for the sample-selection bias that would emerge if a single-equation estimator were used. This regressor proves positive and significant for all specifications, confirming that characteristics that promote adoption also encourage generosity in design. Where significant, the second-stage coefficients for determinants of particular features always show the same sign.

The first three specifications in Panel A, Table 12 explain (the logarithm of) coverage ratios, while the last two model the moral-hazard composites. These regressions show that that *External Pressure* is a significant determinant of EDIS adoption and the two moral-hazard composites. *External Pressure* does not have a significant impact on the coverage ratio.

Executive Constraints exert a positive influence on the moral-hazard composites, although this effect is marginally significant (at the 10% level). This means that countries with more-democratic political systems prove not only more likely to adopt an EDIS, but also more likely to install design features that entail substantial moral hazard. Again, the effect on coverage ratios is not significant.

Crises dispose a country to design a more generous EDIS. This is indicated by the positive and significant coefficients the *Crisis dummy* receives in both stages. These results provide further evidence that systems adopted in crises tend to be poorly designed (Hovakimian, Kane, and Laeven 2003).

Among the strictly economic variables, we find that *GDP per capita* increases the probability of adoption, but has no significant impact on design. Interestingly, *Inflation* proves significant in both stages, and it is the only determinant that seems both to restrain adoption and to promote better design.

We find similar results when we exclude the GDP per capita variable in the second stage equation (columns 1-2 in Panel B) and when we use the ML estimator instead of Heckman's two step procedure (columns 3-4 in Panel B). When we include fixed year effects, the External pressure variable is no longer significant in the moral hazard regressions, but the Crisis dummy variable still enters positive and significantly (columns 5-8 in panel B).

In Table 13, we report the model predictions of coverage ratios for countries with no deposit insurance at yearend 2002. These predictions are based on the Heckman two-step model in column 1 of Panel A, Table 12. The predicted coverage ratios for this sub-set of countries ranges from 0.41 for Angola to 1.33 for China, well below the world average of actual coverage ratios of existing deposit insurance schemes, which stood at 2.45 at yearend 2002. This is to be expected given the below-average level of economic development of most countries that have not yet adopted deposit insurance.

5. Summary and Implications

Because banks play a key role in pricing and constraining risk-taking in other sectors, a well-regulated banking sector may be characterized as a cornerstone of a well-functioning

national economy. Regulatory systems are asked to establish and enforce efficient standards for bank behavior. Deposit insurance is an important and potentially constructive element of a country's financial safety net.

To study the spread of explicit deposit insurance systems over the last decades, this paper uses data on 170 countries to identify the determinants of a country's decision to adopt and design an EDIS. Specifically, we focus on how outside influences and internal political factors feed into this decision-making process. Our results indicate that democratic political processes and external pressure to emulate developed-country regulatory frameworks promote adoption and dispose a country toward generous design. Adoption proves more likely during or after a crisis, presumably because countries are more likely to undertake regulatory reform during distressed times. Unhappily, crisis pressures are likely to result in design features that inadequately control moral hazard. Robustness tests show that these findings survive a range of different statistical methods, control variables, sample periods, and country types.

While we find that richer and more institutionally developed countries are more likely to adopt explicit deposit insurance, such countries better manage the design features. Among the controls, only inflation plays a restraining role.

Our major policy implication is not that deposit insurance is bad. It is that, *ceteris paribus*, systems installed in crisis circumstances and in response to external pressures to emulate other countries are apt to be poorly designed. We find it striking that democratic systems—which allow sectoral interests to exert a stronger influence on policymakers—have a greater tendency to adopt deposit insurance and (at least initially) to design it poorly. Econometrically, finding that deposit-insurance selection and design decisions are simultaneously determined implies that cross-country studies seeking to determine how the presence or absence of an EDIS affects the performance of a country's financial sector and

national economy ought to base their inferences on a multiple-equation system of safety-net design.

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Figure 1: Explicit and Implicit Deposit Insurance Around the World (Data as of end-2003)

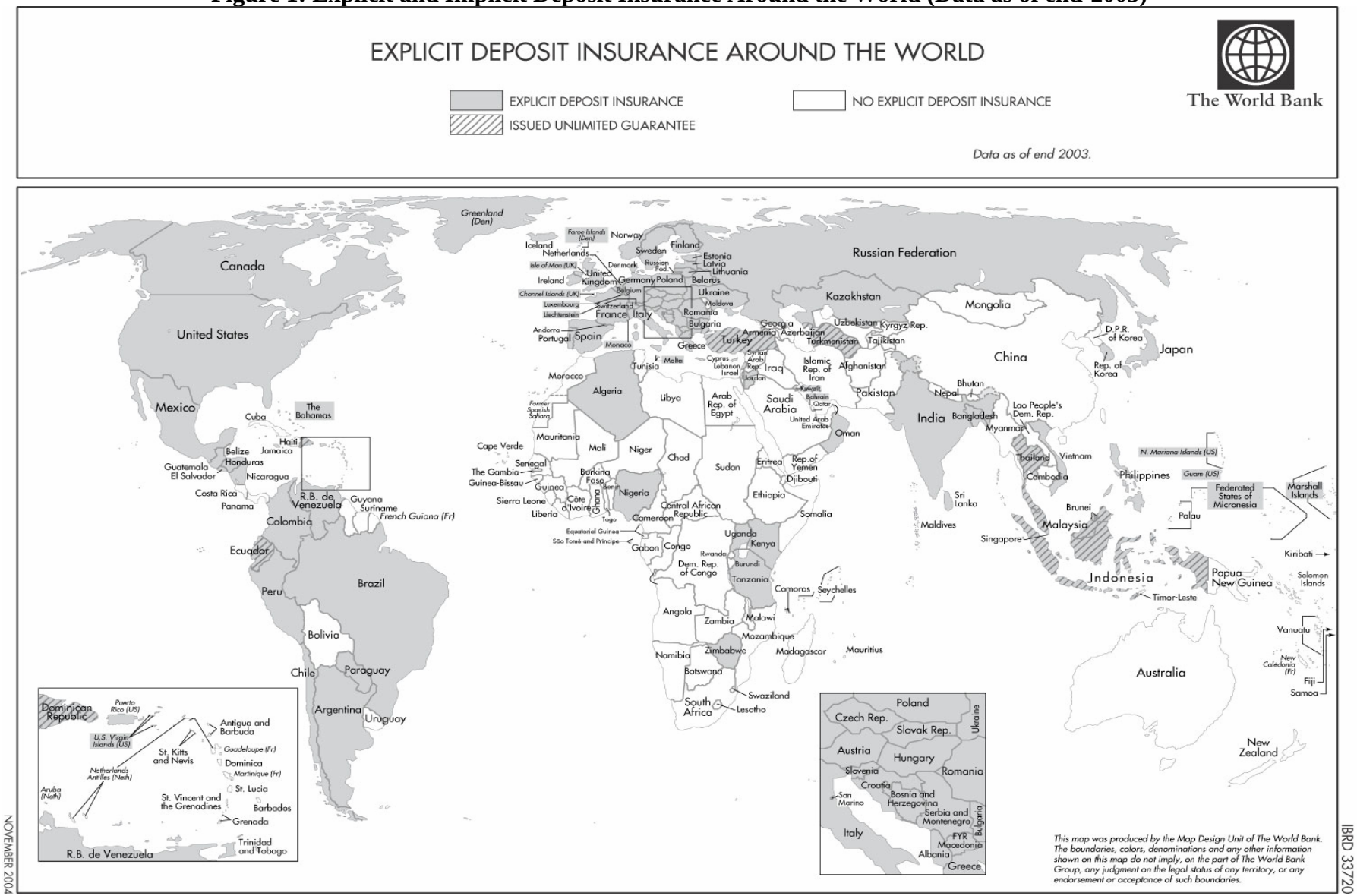

Table 1. Distribution of Countries with and without explicit deposit insurance by income quartile at yearend 2003

This table tallies countries with and without explicit deposit insurance at yearend 2003. The data come from the World Bank Deposit Insurance Database (2004), compiled from the International Association of Deposit Insurers (IADI) and national sources. The total number of countries included is 181. Blanket guarantees are coded as explicit deposit insurance.

Income group	Number of countries	Number of countries with explicit deposit insurance	Number of countries with merely implicit deposit insurance
High income	41	32 (78.05%)	9 (21.95%)
Upper middle income	28	16 (57.14%)	12 (42.86%)
Lower middle income	51	29 (56.86%)	22 (43.14%)
Low income	61	10 (16.39%)	51 (83.61%)
Total	181	87 (48.07%)	94 (51.93%)

Table 2. Explicit deposit insurance systems at yearend 2003

This table lists the countries that adopted explicit deposit insurance systems by yearend 2003. The data come from an updated version of Demirguc-Kunt and Sobaci (2001) by Demirguc-Kunt and Laeven (2005). GDP and bank deposits per capita are from International Financial Statistics (IFS). The following "non-adopting" countries are included in our sample: Afghanistan, Angola, Armenia, Australia, Azerbaijan, Barbados, Belize, Benin, Bhutan, Bolivia[e], Botswana, Brunei, Burkina Faso, Burundi, Cambodia, Cameroon[g], Cape Verde, Central African Republic[g], Chad[g], China, Comoro Islands, Costa Rica, Cote d'Ivoire, Cuba, Djibouti, Egypt, Equatorial Guinea[g], Eritrea, Ethiopia, Fiji, Gabon[g], Gambia, Georgia, Ghana, Grenada, Guinea, Guinea-Bissau, Guyana, Haiti, Hong Kong (China), Iran, Iraq, Israel, Kiribati, Kyrgyz Republic, Laos, Lesotho, Liberia, Libya, Madagascar, Malawi, Maldives, Mali, Mauritania, Mauritius, Moldova[d], Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, New Zealand, Niger, Pakistan, Panama, Papua New Guinea, Qatar, Republic of Congo[g], Rwanda, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, St. Lucia, Sudan, Suriname, Swaziland, Syria, Tajikistan, Togo, Tunisia, United Arab Emirates, Uruguay[f], Uzbekistan, Vanuatu, W. Samoa, Yemen, Zaire, Zambia. The total number of countries covered is 181.

Country	Date enacted	Unlimited guarantee (1=Yes; 0=No)	Coverage limit in 2003 (in US$)	GDP per capita in 2003 (in 1999 US$)	Coverage limit-to-GDP per capita in 2002	Coverage ratio adjusted for coinsurance in 2002	Maximum Coinsurance (in %) in 2002	Coverage limit-to-deposits per capita in 2002
Albania	2002	0	6,568	914	3.3	3.0	15[h]	n.a.
Algeria	1997	0	8,263	1,592	4.2	4.2	0	n.a.
Argentina	1979	0	10,327	8,076	3.6	3.6	0	16.0
Austria	1979	0	25,260	32,049	0.8	0.7	10	0.9
Bahamas	1999	0	50,000	13,485	n.a.	n.a.	0	4.4
Bahrain	1993	0	39,894	10,593	3.5	3.5	0	4.4
Bangladesh	1984	0	1,021	358	5.0	5.0	0	14.6
Belarus	1996	0	1,000	1,347	0.8	0.7	20[i]	5.8
Belgium	1974	0	25,260	29,889	0.8	0.7	10	0.9
Bosnia-Herzegovina	1998	0	3,228	1,551	1.8	1.8	0	n.a.
Brazil	1995	0	6,925	4,486	2.6	2.6	0	8.9
Bulgaria	1995	0	9,686	1,453	2.4	2.4	0	8.5
Canada	1967	0	46,425	22,174	1.7	1.7	0	2.6
Chile	1986	0	3,764	5,146	0.8	0.7	10[i]	2.1
Colombia	1985	0	7,192	2,268	4.3	3.2	25	18.0
Croatia	1997	0	16,343	4,943	2.5	2.5	0	4.1
Cyprus	2000	0	25,260	13,467	2.5	2.2	10	2.0
Czech Rep.	1994	0	31,575	5,207	3.6	3.2	10	5.3
Denmark[c]	1988	0	40,296	37,500	1.2	1.2	0	2.5
Dominican Republic	1962	1	Full	1,946	n.a.	n.a.	0	n.a.
Ecuador	1999	1	Full	1,660	n.a.	n.a.	0	n.a.

Country	Date enacted	Unlimited guarantee (1=Yes; 0=No)	Coverage limit in 2003 (in US$)	GDP per capita in 2003 (in 1999 US$)	Coverage limit-to-GDP per capita in 2002	Coverage ratio adjusted for coinsurance in 2002	Maximum Coinsurance (in %) in 2002	Coverage limit-to-deposits per capita in 2002
El Salvador	1999	0	4,720	1,756	3.1	3.1	0	63.3
Estonia	1998	0	8,058	4,148	0.5	0.4	10	1.4
Finland	1969	0	31,863	30,332	0.9	0.9	0	1.9
France	1980	0	88,410	29,133	2.7	2.7	0	4.2
Germany	1966	0	25,260	31,773	0.8	0.7	10	0.8
Gibraltar	1998	0	25,260	n.a.	n.a.	n.a.	0	n.a.
Greece	1993	0	25,260	12,652	1.5	1.5	0	1.7
Guatemala	1999	0	2,487	1,549	1.3	1.3	0	6.3
Honduras	1999	0	9,297	695	n.a.	n.a.	0	n.a.
Hungary	1993	0	14,429	5,136	0.6	0.6	0	1.5
Iceland	1985	0	29,455	29,984	0.7	0.7	0	1.5
India	1961	0	2,193	453	4.2	4.2	0	8.1
Indonesia	1998	1	Full	980	n.a.	n.a.	0	n.a.
Ireland	1989	0	25,260	25,497	0.6	0.5	10	0.8
Isle of Man	1991	0	35,694	n.a.	n.a.	n.a.	25	n.a.
Italy	1987	0	130,457	20,302	4.8	4.8	0	8.7
Jamaica	1998	0	4,957	2,149	2.1	2.1	0	4.9
Japan	1971	0	93,371	43,818	2.5	2.5	0	2.1
Jordan	2000	0	14,104	1,591	7.8	7.8	0	8.0
Kazakstan	1999	0	2,774	1,342	0.8	0.8	0	5.3
Kenya	1985	0	1,313	337	3.2	3.2	0	9.5
Korea	1996	0	41,925	12,174	4.0	4.0	0	4.8
Kuwait	1982	0	Full	13,792	n.a.	n.a.	0	n.a.
Latvia	1998	0	5,545	2,476	1.4	1.4	0	5.2
Lebanon	1967	0	3,317	2,929	0.9	0.9	0	0.4
Liechtenstein	1992	0	25,260	n.a.	n.a.	n.a.	0	n.a.
Lithuania	1996	0	16,293	2,215	3.1	2.8	10[k]	14.1
Luxembourg	1989	0	25,260	53,013	0.4	0.4	10	0.1
Macedonia	1996	0	25,260	2,441	10.3	9.2	10[l]	46.0
Malaysia	1998	1	Full	4,541	n.a.	n.a.	0	n.a.
Malta	2003	0	25,260	9,812	n.a.	n.a.	n.a.	n.a.

Country	Date enacted	Unlimited guarantee (1=Yes; 0=No)	Coverage limit in 2003 (in US$)	GDP per capita in 2003 (in 1999 US$)	Coverage limit-to-GDP per capita in 2002	Coverage ratio adjusted for coinsurance in 2002	Maximum Coinsurance (in %) in 2002	Coverage limit-to-deposits per capita in 2002
Marshall Islands	1975	0	100,000	1,593	50.3	50.3	0	n.a.
Mexico	1986	0	2,871,337	3,621	n.a.[a]	n.a.[a]	0	n.a.[a]
Micronesia	1963	0	100,000	1,674	52.7	52.7	0	121.2
Netherlands	1979	0	25,260	30,389	0.7	0.7	0	0.7
Nicaragua	2001	0	20,000	n.a.	27.4	27.4	0	74.9
Nigeria	1988	0	366	250	1.3	1.3	0	5.7
Norway	1961[b]	0	299,401	37,369	6.0	6.0	0	11.3
Oman	1995	0	52,016	5,766	6.5	4.9	25[m]	20.6
Paraguay	2003	0	10,500	1,820	n.a.	n.a.	0	n.a.
Peru	1992	0	19,773	2,305	9.2	9.2	0	36.0
Philippines	1963	0	1,800	1,133	2.0	2.0	0	3.8
Poland	1995	0	28,418	3,536	3.6	3.5	10[n]	14.3
Portugal	1992	0	31,575	12,499	1.9	1.9	0	2.1
Romania	1996	0	3,842	1,451	1.6	1.6	0	13.9
Russia	2003	0	6,098	2,255	n.a.	n.a.	n.a.	n.a.
Serbia and Montenegro	2001	0	87	n.a.	0.1	0.1	0	n.a.
Slovak Republic	1996	0	25,260	4,180	2.8	2.8	10	4.8
Slovenia	2001	0	26,931	11,160	1.6	1.6	0	3.0
Spain	1977	0	25,260	16,824	1.2	1.2	10	1.4
Sri Lanka	1987	0	1,034	863	1.2	1.2	0	3.5
Sweden	1996	0	34,364	30,286	1.0	1.0	0	n.a.
Switzerland	1984	0	24,254	45,680	0.5	0.5	0	0.4
Taiwan	1985	0	29,420	15,023	2.3	2.3	0	n.a.
Tanzania	1994	0	235	185	1.0	1.0	0	5.7
Thailand	1997	1	Full	2,721	n.a.	n.a.	0	n.a.
Trinidad & Tobago	1986	0	7,937	4,951	1.1	1.1	0	2.7
Turkey	1983	1	Full	2,887	n.a.	n.a.	0	n.a.
Uganda	1994	0	1,550	345	6.9	6.9	0	44.2
Ukraine	1998	0	281	840	0.3	0.3	0	1.6
United Kingdom	1982	0	19,611	21,616	2.0	1.8	10[o]	n.a.
United States	1934	0	100,000	30,956	2.8	2.8	0	8.7

Country	Date enacted	Unlimited guarantee (1=Yes; 0=No)	Coverage limit in 2003 (in US$)	GDP per capita in 2003 (in 1999 US$)	Coverage limit-to-GDP per capita in 2002	Coverage ratio adjusted for coinsurance in 2002	Maximum Coinsurance (in %) in 2002	Coverage limit-to-deposits per capita in 2002
Venezuela	1985	0	6,258	3,260	2.3	2.3	0	16.5
Vietnam	2000	0	1,948	351	4.5	4.5	0	n.a.
Zimbabwe	2003	0	3,640	665	n.a.	n.a.	n.a.	n.a.

[a] In Mexico, a blanket guarantee was in place until end-2002. The guarantee has been gradually removed and the coverage limit is to be reduced from 10,000,000 Investment Units UDIs) in 2003 to 400,000 Investment Units (UDIs), or about US$ 110,000 at the current exchange rate, by the year 2005.

[b] In Norway, a private guarantee fund for savings banks with voluntary membership had been in place since 1921, with membership becoming obligatory in 1924. A private guarantee fund for commercial banks was first introduced in 1938. Both guarantee funds were not pure deposit insurance schemes but had wide mandates to support member banks in liquidity or solvency crisis.

[c] Banks in Greenland with Danish ownership are covered by the Danish deposit insurance scheme.

[d] Moldova has adopted deposit insurance in 2004.

[e] While Bolivia does not have a formal deposit insurance system, it has a Financial Restructuring Fund set up in December 2001 that acts as deposit insurance.

[f] Uruguay has established a deposit insurance system in 2002 (Law on protection of bank deposits was enacted on December 27, 2002, creating a bank deposits collateral fund and a Superintendency of Bank Savings Protection), but it is not yet regulated.

[g] A proposal for explicit deposit insurance was drafted in 1999 by these 6 Francophone African countries but the proposal has only been ratified by 2 out of the 6 Communauté Économique et Monétaire de l'Afrique Centrale (CEMAC) countries: Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, and Republic of Congo.

[h] Coinsurance of up to 15% (up to 350,000 Lek full insurance, and from 35,000 to 700,000 insurance at 85%).

[i] The equivalent of USD 2000 (per person per bank) is fully covered by insurance. 80% coverage is provided for the next USD 3000 (that is from USD 2000 to USD 5000). Amounts exceeding the equivalent of USD 5000 per person per bank are not insured.

[j] Full guarantee on time deposits; 90% coverage of savings deposits up to a limit of 120 Unidades de Fomento. (1 Unidad de Fomento = US$ 24).

[k] Coverage of 100% up to LTL 10,000 and the balance at 90 percent.

[l] Coverage of 100% up to 10,000 Euro; 90% next 10,000 Euro.

[m] Coverage is RO 20,000 or 75% of net deposits, whichever is less.

[n] Coverage is 100% of deposits up to 1000 Euro; and 90% from 1000 to 18000 Euro.

[o] Coverage is 100% of the first £2000, and 90% of the next £33,000.

Table 3. Summary statistics

This table presents summary statistics for the endogenous and explanatory variables used in the regressions. See Appendix Table 1 for a detailed explanation of variables and data sources.

Variable	Mean	Median	Std. dev.	Min	Max	No. obs
Endogenous						
Deposit Insurance (EI)	0.17	0.00	0.37	0.00	1.00	7783
Coverage ratio	6.24	2.45	13.73	0.05	117.86	919
Administration	0.55	1.00	0.50	0.00	1.00	1249
Membership	0.14	0.00	0.35	0.00	1.00	1249
Foreign currency deposits	0.75	1.00	0.43	0.00	1.00	1255
Interbank deposits	0.24	0.00	0.43	0.00	1.00	1255
Coinsurance	0.74	1.00	0.44	0.00	1.00	1220
Permanent fund	0.83	1.00	0.38	0.00	1.00	1256
Funding	0.01	0.00	0.12	0.00	1.00	1243
Moral-hazard composite	0.00	-0.04	1.00	-1.95	3.84	911
Explanatory						
Real Interest Rate	-0.88	1.33	12.36	-98.83	44.62	3962
Inflation	47.96	6.51	532.72	-31.91	26762.02	5788
GDP Growth	3.64	3.89	5.82	-34.86	34.31	5811
Credit Growth	20.38	14.91	27.24	-99.84	249.04	4821
Terms-of-Trade Change	0.46	0.00	12.79	-64.35	139.60	4346
GDP per capita	5.48	1.56	8.62	0.05	56.51	5748
External pressure	0.12	0.00	0.32	0.00	1.00	7783
World Bank Loan	0.01	0.00	0.10	0.00	1.00	7783
EU Directive	0.03	0.00	0.18	0.00	1.00	7783
EU Candidacy	0.01	0.00	0.12	0.00	1.00	7783
Emulation	0.17	0.11	0.14	0.02	0.48	7783
Crisis Dummy	0.07	0.00	0.25	0.00	1.00	7783
Post-crisis adoption	0.10	0.00	0.30	0.00	1.00	7783
Fiscal cost / GDP	0.56	0.00	4.13	0.00	55.10	7501
Gov. Ownership	54.31	53.08	34.98	0.00	100.00	3128
Bank deposits / GDP	0.34	0.25	0.34	0.00	7.78	4149
Executive Constraints	3.88	3.00	2.34	1.00	7.00	5563
Polity Score	-0.19	-3.00	7.64	-10.00	10.00	5563
Political Competition	4.88	3.00	3.77	1.00	10.00	5563
Bureaucracy	2.15	2.00	1.22	0.00	4.00	2464

Corruption	3.23	3.00	1.39	0.00	6.00	2464
Dem. Accountability	3.58	4.00	1.64	0.00	6.00	2464
Law & Order	3.65	4.00	1.56	0.00	6.00	2464

Table 4. Correlation matrix

This table shows the bivariate correlation between the variables used in the regressions and the significance level of each correlation coefficient. * indicates significance at the 5% level.

	Deposit insurance	Coverage ratio	Moral hazard composite	Real Interest Rate	Inflation	GDP Growth	Credit Growth	Terms of Trade Change	GDP per capita	External pressure	World Bank Loan	EU Directive	EU Candidacy	Emulation	Crisis Dummy	Post-crisis adoption	Fiscal cost / GDP	Gov. Ownership	Polity Score
Coverage ratio																			
Moral hazard composite		.65*																	
Real Interest Rate	.10*	.01	-.05																
Inflation	-.03*	-.04	-.01	-.43*															
GDP Growth	-.02	.02	.06	-.02	-.14*														
Credit Growth	-.04*	-.05	.04	-.41*	.45*	.18*													
Terms of trade change	.00	.02	.03	.00	-.01	.03	.00												
GDP per capita	.41*	-.26*	-.41*	.09*	-.08*	-.11*	-.26*	-.04											
External pressure	.27*	-.10*	-.08*	.08*	-.05	-.04	-.08*	.04	-.07*										
World Bank Loan	.15*	-.04	-.04	.04	-.01	.02	.03	-.01	-.17*	.21*									
EU Directive	.34*	-.15*	-.37*	.04	-.05	.00*	-.09	-.01	.28*	.23*	.07*								
EU Candidacy	.16*	-.08*	-.15*	.00	.03	.00	.10*	.01	-.17*	.19*	.35*	.39*							
Emulation	.37*	-.11*	-.12*	.08*	-.04	-.07*	-.03	.03	-.05	.80*	.23*	.35*	.23*						
Crisis Dummy	.10*	-.01	.09*	-.04	.13*	-.12*	.02	-.02	-.14*	-.04	-.04	-.13*	-.02	.03					
Post-crisis adoption	.06*	-.05	-.03	.00	-.01	-.01	.08*	.01	-.29*	.15*	.23*	.07*	.22*	.20*	.25*				
Fiscal cost / GDP	.12*	-.03	.03	-.04	.07*	-.15*	.03	-.03	-.05	.09*	-.05	-.10*	-.05	.12*	.78*	.18*			
Gov. ownership	-.24*	.27*	-.04	-.08*	.11	.07	.25*	.03	-.42*	-.10*	.03	-.13*	.15*	-.10*	.05	.03	-.05		
Polity score	.41*	-.22*	-.24*	.16*	-.03	-.20*	-.26*	-.06	.46*	-.02	.01	.26*	.10*	-.04	-.18*	-.06	-.04	-.19*	
Exec. constraints	.10*	-.23*	-.27*	.14*	-.03	-.19*	-.26*	-.06	.47*	-.02	.00	.28*	.14*	-.04	-.17*	-.02	-.04	-.22*	.96*

Table 5. Alternative models of deposit-insurance adoption

This table uses logit regressions to explain the adoption of explicit deposit insurance. The endogenous variable is the explicit deposit-insurance indicator. The regression in column 2 includes year dummies (not shown). Regression 3 is the same as 1 but includes the external pressure variable. Regression 4 is the same as regression 1 but adds the executive constraints variable. Regression 5 adds the executive constraints variable to regression 3. Regression 6 re-estimates model 5, restricting the sample to the post-1970 era. Regression 7 fits model 5 to the post-1980 era. Regression 8 fits model 5 and increases the sample size by excluding three macroeconomic explanatory variables. Regression 9 re-estimates model 8 but drops observations after deposit insurance is adopted in the country. Regression 10 presents the marginal effects and their standard errors of regression 8. An intercept is used but not shown. White standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

	1	2	3	4	5	6	7	8	9	10 Marginal effects
Real interest rate	0.026**	0.008	0.019*	0.018*	0.012	0.010	0.004			
	(0.012)	(0.008)	(0.011)	(0.011)	(0.010)	(0.009)	(0.008)			
Inflation	0.014**	0.011*	0.014**	0.012*	0.012*	0.009	0.007	-0.000	-0.001	-0.000
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.000)	(0.001)	(0.000)
GDP growth	-0.023	-0.009	-0.021	-0.024	-0.021	-0.006	0.002	-0.004	-0.039*	-0.000
	(0.014)	(0.016)	(0.015)	(0.018)	(0.019)	(0.019)	(0.023)	(0.013)	(0.023)	(0.002)
Credit growth	0.001	0.002	0.003	0.002	0.004	0.003	0.003			
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)			
Terms of trade	-0.001	-0.002	-0.002	0.001	-0.000	-0.001	0.002			
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)			
GDP per capita	0.098***	0.125***	0.110***	0.069***	0.084***	0.086***	0.102***	0.078***	0.045***	0.010***
	(0.020)	(0.026)	(0.022)	(0.021)	(0.025)	(0.024)	(0.025)	(0.020)	(0.015)	(0.003)
External pressure			1.476***		1.557***	1.422***	1.244***	1.579***	0.813**	0.292***
			(0.227)		(0.245)	(0.234)	(0.215)	(0.197)	(0.339)	(0.041)
Executive constraints				0.263***	0.255***	0.268***	0.260***	0.325***	0.240***	0.042***
				(0.081)	(0.087)	(0.089)	(0.091)	(0.070)	(0.058)	(0.010)
Observations	3091	3091	3091	2831	2831	2517	1958	4685	3733	4685
Countries	136	136	136	123	123	123	122	147	144	147
% correct	78.62	78.58	78.55	77.71	79.90	79.02	77.57	84.27	78.23	84.27
Model χ^2	32.61	238.87	60.12	45.15	66.71	64.00	71.54	112.13	41.33	112.13
Pseudo R^2	0.15	0.24	0.19	0.18	0.22	0.23	0.24	0.25	0.07	0.25

Table 6. Robustness experiments investigating alternative external pressure variables

This table compares alternative logit regressions seeking to explain the adoption of explicit deposit insurance. The endogenous variable is the explicit deposit insurance indicator. An intercept is used but not shown. White standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

Panel A. Without time trend

	1	2	3	4	5	6	7	8
Inflation	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
GDP Growth	-0.004	-0.007	-0.008	-0.008	-0.004	-0.005	-0.004	-0.005
	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
GDP per capita	0.078***	0.074***	0.065***	0.075***	0.080***	0.074***	0.081***	0.075***
	(0.020)	(0.018)	(0.018)	(0.018)	(0.020)	(0.020)	(0.020)	(0.020)
External pressure	1.579***				1.491***	1.476***	1.526***	1.401***
	(0.197)				(0.193)	(0.205)	(0.196)	(0.200)
World Bank Loan		2.082***			1.569***			1.328**
		(0.486)			(0.570)			(0.593)
EU Directive			2.221***			1.961***		1.862***
			(0.467)			(0.490)		(0.488)
EU Candidacy				1.645***			1.353**	
				(0.500)			(0.545)	
Executive Constraints	0.325***	0.325***	0.294***	0.306***	0.319***	0.291***	0.303***	0.288***
	(0.070)	(0.066)	(0.066)	(0.066)	(0.070)	(0.071)	(0.071)	(0.071)
Observations	4685	4685	4685	4685	4685	4685	4685	4685
No. of countries	147	147	147	147	147	147	147	147
Model χ^2	112.13	72.06	93.46	71.34	113.18	119.85	114.28	123.11
Pseudo R^2	0.25	0.22	0.24	0.22	0.26	0.27	0.26	0.28

Panel B. With a linear time trend

	1	2	3	4	5	6	7	8
Inflation	-0.001	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.000
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GDP Growth	0.017	0.009	0.014	0.016	0.016	0.014	0.016	0.013
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)
GDP per capita	0.086***	0.088***	0.088***	0.087***	0.088***	0.083***	0.088***	0.084***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
External pressure				0.325*				0.301
				(0.197)				(0.199)
World Bank Loan					1.147**			0.994*
					(0.497)			(0.524)
EU Directive						1.232***		1.169**
						(0.474)		(0.474)
EU Candidacy							0.749	
							(0.516)	
Executive Constraints	0.320***	0.316***	0.318***	0.320***	0.315***	0.295***	0.305***	0.293***
	(0.077)	(0.077)	(0.077)	(0.078)	(0.078)	(0.078)	(0.079)	(0.079)
Time trend	0.085***		0.053*	0.078***	0.083***	0.078***	0.083***	0.070***
	(0.016)		(0.028)	(0.017)	(0.016)	(0.015)	(0.016)	(0.016)
Emulation		6.556***	2.630					
		(0.975)	(1.769)					
Observations	4685	4685	4685	4685	4685	4685	4685	4685
No. of countries	147	147	147	147	147	147	147	147
Model χ^2	77.83	87.05	82.16	85.03	82.22	93.36	81.79	104.06
Pseudo R^2	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.32

Table 7. Robustness experiments focused on the effects of crisis experience, government ownership of banks, and quality of institutions

This table compares alternative logit regressions seeking to explain the adoption of explicit deposit insurance. The endogenous variable is explicit deposit insurance indicator. An intercept is used but not shown. White standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

	1	2	3	4	5	6	7	8	9
Inflation	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP Growth	0.007	-0.002	-0.005	-0.044*	-0.007	0.006	0.010	0.007	-0.021
	(0.013)	(0.013)	(0.015)	(0.026)	(0.017)	(0.018)	(0.017)	(0.017)	(0.017)
GDP per capita	0.084***	0.087***	0.078***	0.049*	0.058***	0.068***	0.112***	0.085***	0.076***
	(0.021)	(0.022)	(0.020)	(0.027)	(0.019)	(0.025)	(0.025)	(0.023)	(0.025)
External pressure	1.640***	1.604***	1.565***	0.266	1.753***	1.078***	0.853***	1.040***	1.582***
	(0.214)	(0.210)	(0.216)	(0.275)	(0.227)	(0.190)	(0.232)	(0.183)	(0.220)
Executive constraints	0.330***	0.306***	0.361***	0.246**	0.283***	0.260***	0.336***	0.287***	0.259***
	(0.071)	(0.071)	(0.073)	(0.116)	(0.080)	(0.088)	(0.090)	(0.088)	(0.083)
Crisis dummy	1.234***								
	(0.279)								
Post-crisis adoption		0.867**							
		(0.387)							
Fiscal cost / GDP			0.043***						
			(0.017)						
Privatization				1.729***					
				(0.345)					
Gov. Ownership					0.003				
					(0.005)				
Bureaucracy						0.269			
						(0.191)			
Corruption							-0.270*		
							(0.143)		
Law & Order								0.043	
								(0.123)	
Bank deposits / GDP									0.334
									(0.713)
Observations	4685	4685	4439	1851	2513	2081	2081	2081	3527
Number of countries	147	147	147	47	85	125	125	125	132
Model χ^2	116.39	104.73	105.87	56.49	83.49	67.26	85.56	72.68	85.28
Pseudo R^2	0.27	0.26	0.28	0.24	0.21	0.24	0.25	0.24	0.23

Table 8. Robustness experiments investigating alternative political variables

This table compares alternative logit regressions seeking to explain the adoption of explicit deposit insurance. The endogenous variable is the explicit deposit insurance indicator. An intercept is used but not shown. White standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

	1	2	3
Inflation	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
GDP Growth	-0.005	-0.006	0.007
	(0.013)	(0.013)	(0.016)
GDP per capita	0.078***	0.078***	0.068***
	(0.020)	(0.019)	(0.019)
External pressure	1.530***	1.482***	1.069***
	(0.203)	(0.206)	(0.177)
Polity Score	0.103***		
	(0.021)		
Political Competition		0.201***	
		(0.039)	
Dem. Accountability			0.454***
			(0.115)
Observations	4685	4685	2275
No. of countries	147	147	133
Model χ^2	118.28	118.97	84.17
Pseudo R^2	0.26	0.25	0.23

Table 9. Robustness experiments focused on the influence of region and population size

This table compares alternative logit regressions seeking to explain the adoption of explicit deposit insurance. The endogenous variable is the explicit deposit-insurance indicator. Regressions in columns 1 to 2 exclude current European Union members. Regressions in columns 3 to 4 exclude countries with fewer than one-million inhabitants. Regressions in columns 5 and 6 include dummies by continent. An intercept is used but not shown. White standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

	Excluding EU members			Excluding countries with pop.< 1mil.			With dummies by continent		
	1	2	3	4	5	6	7	8	9
Inflation	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
GDP Growth	-0.006	-0.002	-0.000	-0.011	-0.008	-0.002	-0.015	-0.008	-0.008
	(0.009)	(0.009)	(0.013)	(0.010)	(0.011)	(0.013)	(0.010)	(0.011)	(0.014)
GDP per capita	0.083***	0.087***	0.065***	0.103***	0.110***	0.074***	0.057***	0.062***	0.059***
	(0.021)	(0.023)	(0.024)	(0.019)	(0.021)	(0.019)	(0.016)	(0.017)	(0.020)
External pressure		1.460***	1.347***		1.725***	1.577***		1.852***	1.803***
		(0.186)	(0.213)		(0.188)	(0.203)		(0.194)	(0.228)
Executive constraints			0.319***			0.344***			0.276***
			(0.077)			(0.071)			(0.080)
Observations	4757	4757	3958	4858	4858	4517	5609	5609	4541
Number of countries	145	145	124	143	143	140	170	170	143
Model χ^2	16.50	74.61	83.78	32.49	95.62	107.66	114.41	170.91	168.30
Pseudo R^2	0.08	0.12	0.19	0.15	0.20	0.26	0.22	0.27	0.32

Table 10. Hazard models of deposit-insurance adoption

This table compares alternative hazard regressions seeking to explain the hazard rate of adopting explicit deposit insurance over the period 1934-2003. The model considers the adoption of deposit insurance as a "transforming event." The endogenous variable is the number of years between 1934 and the adoption date. Columns 1, 5 and 7 use a proportional Cox (1972) hazard model. Columns 2 to 4, 6, and 8-11 estimate other parametric survival models. The assumed distributions of the hazard function in column 2 is exponential and in columns 3-4, 6, and 8-11 Weibull. The coefficients reported are the logarithms of the underlying relative-hazard coefficients. The number of adopting countries is the number of countries that have adopted deposit insurance during the observation period. An intercept is used but not shown. Lin and Wei (1989) standard errors are shown in brackets. The standard errors are adjusted for clustering at the country-level. *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

	Cox	Exponential	Weibull	Weibull	Cox	Weibull	Cox	Weibull	Weibull	Weibull	Weibull	Weibull
	1	2	3	4	5	6	7	8	9	10	11	12
Inflation	-0.001	-0.000	-0.001	0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.000)	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GDP growth	-0.007	-0.021	-0.001	-0.038	-0.031	-0.019	-0.019	-0.005	-0.005	-0.010	-0.012	-0.014
	(0.020)	(0.018)	(0.020)	(0.025)	(0.026)	(0.025)	(0.025)	(0.024)	(0.024)	(0.025)	(0.024)	(0.024)
GDP per capita	0.072***	0.068***	0.069***	0.075***	0.051***	0.048***	0.062***	0.058***	0.058***	0.062***	0.059***	0.059***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Real interest rate				-0.010								
				(0.012)								
Credit growth				0.003								
				(0.006)								
Terms of trade				0.000								
				(0.006)								
Executive constraints					0.215***	0.224***	0.208***	0.219***	0.219***	0.205***	0.181***	0.177***
					(0.064)	(0.064)	(0.063)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)
Crisis dummy							1.265***	1.246***	1.247***	1.129***	1.158***	1.128***
							(0.304)	(0.271)	(0.284)	(0.267)	(0.279)	(0.278)
External pressure									0.007			
									(0.377)			
World Bank Loan										1.869***		
										(0.344)		
EU Directive											1.221***	
											(0.277)	
EU Candidacy												1.286***
												(0.265)
Observations	4567	4567	4567	2303	3730	3730	3730	3730	3730	3730	3730	3730
Number of countries	166	166	166	130	145	145	145	145	145	145	145	145
Number of adopting countries	74	74	74	57	68	68	68	68	68	68	68	68

Evolutionary parameter α	4.48	4.26	4.49	4.26	4.00	4.05	4.02
(p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 11. Predicted year of adoption for countries that have not adopted deposit insurance as of yearend 2002

Predicted year of adoption based on the Weibull duration model in column 9, Table 10, for countries with no deposit insurance in 2002. We also report estimates of the number of years until each country without an EDIS can be expected to adopt deposit insurance under year 2002 circumstances (the last year of our sample period). We could not estimate the expected adoption year for the following countries due to missing information for some of the model variables: Afghanistan, Barbados, Belize, Brunei, Cape Verde, Comoro Islands, Cuba, Democratic Republic of Congo, Grenada, Hong Kong, Iraq, Israel, Kiribati, Libya, Maldives, Malta, Myanmar, Qatar, Saudi Arabia, Seychelles, Solomon Islands, Somalia, St. Lucia, Suriname, United Arab Emirates, Vanuatu, and Western Samoa. Countries that have adopted deposit insurance since 2002 are marked with an asterisk. See notes for additional information about select countries.

Country	Predicted adoption year	Predicted years until adoption (from 2002)
Australia	1981	-21
New Zealand	1985	-17
Singapore	1989	-13
China	1993	-9
Mauritius	1996	-6
Botswana	1996	-6
South Africa	1996	-6
Costa Rica	1996	-6
Paraguay*	1998	-4
Bolivia*	1999	-3
Papua New Guinea	1999	-3
Lesotho	1999	-3
Panama	1999	-3
Moldova*	1999	-3
Mongolia	2000	-2
Fiji	2000	-2
Senegal	2002	0
Ghana	2003	1
Namibia	2004	2
Russia*	2004	2
Guyana	2005	3
Madagascar	2006	4
Cote d'Ivoire	2006	4
Armenia	2006	4

Country	Predicted adoption year	Predicted years until adoption (from 2002)
Guinea-Bissau	2006	4
Central African Rep.	2006	4
Georgia	2006	4
Benin	2006	4
Niger	2006	4
Zambia	2007	5
Sierra Leone	2007	5
Mali	2007	5
Iran	2009	7
Kyrgyz Republic	2010	8
Cambodia	2010	8
Malawi	2010	8
Tajikistan	2011	9
Mozambique	2011	9
Morocco	2013	11
Egypt	2013	11
Djibouti	2013	11
Syria	2013	11
Guinea	2014	12
Nepal	2014	12
Gabon	2014	12
Mauritania	2014	12
Haiti	2014	12
Ethiopia	2014	12
Laos	2014	12
Burkina Faso	2014	12
Burundi	2015	13
Tunisia	2016	14
Equatorial Guinea	2017	15
Swaziland	2017	15
Republic of Congo	2018	16
Cameroon	2018	16

Country	Predicted adoption year	Predicted years until adoption (from 2002)
Togo	2018	16
Pakistan	2018	16
Gambia	2018	16
Angola	2018	16
Bhutan	2018	16
Azerbaijan	2019	17
Rwanda	2019	17
Yemen	2019	17
Eritrea	2019	17
Chad	2019	17
Liberia	2020	18
Zimbabwe*	2021	19
Sudan	2023	21
Uzbekistan	2024	22

Notes:

a. Albania and Uruguay have established deposit insurance systems in 2002.

b. Malta, Paraguay, Russia, and Zimbabwe have adopted deposit insurance in 2003.

c. Moldova has adopted deposit insurance in 2004.

d. While Bolivia does not have a formal deposit insurance system, it has a Financial Restructuring Fund set up in December 2001 that acts as deposit insurance.

e. A proposal for explicit deposit insurance was drafted in 1999 by these 6 Francophone African countries but the proposal has only been ratified by 2 out of the 6 Communauté Économique et Monétaire de l'Afrique Centrale (CEMAC) countries: Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, and Republic of Congo.

f. To our knowledge, several countries have considered (or are considering) the adoption of deposit insurance: Australia, New Zealand, Singapore, China, South Africa, Namibia, and Pakistan.

Table 12. Heckman two-step selection model for deposit-insurance coverage and other design features

This table reports a series of Heckman two-stage selection regressions for design features. The endogenous variable in the first-stage regression (selection equation) is the explicit deposit insurance indicator. The endogenous variable in the second-stage (design equation) is the logarithm of the indicated deposit-insurance coverage ratio. Coverage ratio is the ratio of coverage limit per person to GDP per capita. Coverage ratio adjusted for coinsurance is the ratio of the effective coverage per person (i.e., adjusting the coverage limit for the percentage of coinsurance) to GDP per capita, where effective coverage is calculated by adjusting the coverage limit by the amount of coinsurance. Coverage limit to deposits is the ratio of coverage limit per person to bank deposits per capita. Moral-hazard is an index based on the first principal component of the following design features: Coverage ratio, Administration, Membership, Foreign currency deposits, Interbank deposits, Coinsurance, Permanent fund, and Funding. All design features have been transformed to standardized variables (with mean zero and standard deviation of one) for the principal component calculations. Moral-hazard without coverage is an alternative moral-hazard index variable that focuses on design features excluding the coverage ratio. In Panel A, we report Heckman's (1979) two-step efficient estimates. In panel B, we report Heckman's (1979) two-step efficient estimates or maximum likelihood (ML) estimates. For the regressions in Panel B we exclude the GDP per capita variable in the design (second-stage) equation. Regressions 5-8 in Panel B include fixed year effects (not reported). Standard errors are shown in brackets and *, **, *** indicate significance at the 10%, 5% and 1% level, respectively.

Panel A: Identical variables for selection (first-stage) and design (second-stage) equations

	Coverage ratio	Coverage ratio adjusted for coinsurance	Coverage limit to deposits	Moral-hazard	Moral-hazard without coverage
Second-stage: Design	1	2	3	4	5
Inflation	-0.004***	-0.004***	-0.003***	-0.002***	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
GDP Growth	-0.018*	-0.016	-0.021*	0.006	0.006
	(0.010)	(0.010)	(0.013)	(0.010)	(0.010)
GDP per capita	-0.000	0.002	-0.020	0.012	0.013
	(0.011)	(0.011)	(0.015)	(0.011)	(0.010)
External pressure	0.174	0.216	0.358	0.449**	0.465**
	(0.218)	(0.223)	(0.308)	(0.217)	(0.187)
Executive constraints	0.061	0.071	0.059	0.089*	0.088*
	(0.054)	(0.055)	(0.075)	(0.054)	(0.051)
Crisis dummy	0.605***	0.676***	0.564***	0.631***	0.702***
	(0.155)	(0.158)	(0.207)	(0.154)	(0.153)
Post-crisis adoption	0.207	0.190	0.452**	0.191	0.149
	(0.154)	(0.157)	(0.212)	(0.154)	(0.134)
Heckman Lambda	0.980***	1.053***	1.410***	1.037***	1.023***
	(0.346)	(0.353)	(0.482)	(0.349)	(0.310)
First-stage: DI					
Inflation	-0.001***	-0.001***	-0.001**	-0.001**	-0.000*
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
GDP Growth	-0.001	-0.001	-0.004	-0.002	0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)

GDP per capita	0.050***	0.050***	0.048***	0.051***	0.054***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
External pressure	0.949***	0.949***	0.943***	0.932***	0.931***
	(0.069)	(0.069)	(0.070)	(0.070)	(0.068)
Executive constraints	0.178***	0.178***	0.181***	0.177***	0.183***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Crisis dummy	0.488***	0.488***	0.472***	0.476***	0.618***
	(0.087)	(0.087)	(0.089)	(0.088)	(0.080)
Post-crisis adoption	0.510***	0.510***	0.515***	0.507***	0.441***
	(0.073)	(0.073)	(0.074)	(0.073)	(0.072)
Observations	4492	4492	4435	4484	4600
Censored observations	3665	3665	3665	3665	3665

Panel B: Exclude GDP per capita in design equation (second-stage)

	No year effects				With year effects			
	Heckman two-step estimator		Heckman ML estimator		Heckman two-step estimator		Heckman ML estimator	
	Coverage ratio	Moral hazard	Coverage ratio	Moral hazard	Coverage ratio	Moral hazard	Coverage ratio	Moral hazard
Second-stage: Design	1	2	3	4	5	6	7	8
Inflation	-0.004***	-0.002***	-0.003***	-0.002**	-0.004***	-0.002**	-0.003***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GDP Growth	-0.018*	0.007	-0.015	0.008	-0.023**	0.004	-0.022**	0.003
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
External pressure	0.181*	0.243***	0.007	0.177**	-0.003	-0.300	-0.255	-0.362
	(0.094)	(0.083)	(0.076)	(0.076)	(0.491)	(0.509)	(0.517)	(0.515)
Executive constraints	0.063**	0.038	-0.006	0.009	0.049*	0.011	-0.008	-0.005
	(0.028)	(0.027)	(0.023)	(0.023)	(0.028)	(0.026)	(0.022)	(0.024)
Crisis dummy	0.609***	0.524***	0.524***	0.497***	0.607***	0.540***	0.536***	0.528***
	(0.113)	(0.103)	(0.106)	(0.101)	(0.111)	(0.100)	(0.105)	(0.099)
Post-crisis adoption	0.212**	0.050	0.177**	0.053	0.260***	0.095	0.241***	0.106
	(0.088)	(0.079)	(0.083)	(0.078)	(0.086)	(0.076)	(0.081)	(0.076)
Heckman Lambda	0.994***	0.669***	0.681***	0.541***	0.951***	0.573***	0.691***	0.503***
	(0.103)	(0.093)	(0.062)	(0.073)	(0.102)	(0.091)	(0.061)	(0.076)
First-stage: DI								
Inflation	-0.001***	-0.001**	-0.001**	-0.001**	-0.001***	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
GDP Growth	-0.001	-0.002	0.000	-0.001	-0.001	-0.002	0.000	-0.001

	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
GDP per capita	0.050***	0.051***	0.052***	0.053***	0.050***	0.051***	0.052***	0.052***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
External pressure	0.949***	0.932***	0.960***	0.925***	0.949***	0.932***	0.962***	0.926***
	(0.069)	(0.070)	(0.069)	(0.069)	(0.069)	(0.070)	(0.069)	(0.069)
Executive constraints	0.178***	0.177***	0.170***	0.172***	0.178***	0.177***	0.171***	0.174***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Crisis dummy	0.488***	0.476***	0.501***	0.470***	0.488***	0.476***	0.499***	0.468***
	(0.087)	(0.088)	(0.086)	(0.087)	(0.087)	(0.088)	(0.086)	(0.087)
Post-crisis adoption	0.510***	0.507***	0.526***	0.488***	0.510***	0.507***	0.519***	0.484***
	(0.073)	(0.073)	(0.072)	(0.073)	(0.073)	(0.073)	(0.072)	(0.073)
Observations	4492	4484	4492	4484	4492	4484	4492	4484
Censored observations	3665	3665	3665	3665	3665	3665	3665	3665
Joint significance of year effects (p-value)					0.00	0.00	0.00	0.00

Table 13. Predicted coverage ratios for countries that have not adopted deposit insurance as of yearend 2002

Predicted coverage ratio based on the Heckman two-step model in column 1, Panel A, Table 12, for countries with no deposit insurance in 2002. We could not estimate the expected coverage ratio for the following countries due to missing information for some of the model variables: Afghanistan, Barbados, Belize, Brunei, Cape Verde, Comoro Islands, Cuba, Democratic Republic of Congo, Grenada, Hong Kong, Iraq, Israel, Kiribati, Libya, Maldives, Malta, Myanmar, Qatar, Saudi Arabia, Seychelles, Solomon Islands, Somalia, St. Lucia, Suriname, United Arab Emirates, Vanuatu, and Western Samoa. Countries that have adopted deposit insurance since 2002 are marked with an asterisk. See notes for additional information about select countries.

Country	Predicted coverage ratio (2002)
Angola	0.41
Zimbabwe*	0.57
Uzbekistan	0.57
Sudan	0.61
Chad	0.64
Liberia	0.64
Azerbaijan	0.65
Eritrea	0.66
Rwanda	0.67
Bhutan	0.67
Yemen	0.69
Tajikistan	0.69
Mozambique	0.70
Pakistan	0.71
Swaziland	0.72
Cameroon	0.73
Gabon	0.73
Iran	0.73
Laos	0.74
Republic of Congo	0.74
Togo	0.74
Armenia	0.74
Gambia	0.74
Burundi	0.74
Equatorial Guinea	0.75
Burkina Faso	0.75

Country	Predicted coverage ratio (2002)
Tunisia	0.75
Morocco	0.76
Guinea	0.77
Mauritania	0.77
Egypt	0.78
Mali	0.78
Syria	0.78
Ethiopia	0.78
Singapore	0.79
Djibouti	0.81
Cambodia	0.81
Haiti	0.82
Malawi	0.82
Russia*	0.82
Zambia	0.83
Sierra Leone	0.83
Nepal	0.84
Georgia	0.84
Benin	0.85
Ghana	0.85
Namibia	0.87
Central African Republic	0.87
Niger	0.88
Kyrgyz Republic	0.89
Moldova*	0.91
Fiji	0.92
Mongolia	0.92
Guyana	0.93
Cote d'Ivoire	0.94
Senegal	0.95
Mauritius	0.96
Lesotho	0.96
Costa Rica	0.97
South Africa	0.98

Country	Predicted coverage ratio (2002)
Australia	0.98
Botswana	0.98
Panama	0.98
New Zealand	0.99
Guinea-Bissau	0.99
Bolivia*	1.01
Papua New Guinea	1.06
Paraguay*	1.06
Madagascar	1.10
China	1.33

Notes:

a. Albania and Uruguay have established deposit insurance systems in 2002.

b. Malta, Paraguay, Russia, and Zimbabwe have adopted deposit insurance in 2003.

c. Moldova has adopted deposit insurance in 2004.

d. While Bolivia does not have a formal deposit insurance system, it has a Financial Restructuring Fund set up in December 2001 that acts as deposit insurance.

e. A proposal for explicit deposit insurance was drafted in 1999 by these 6 Francophone African countries but the proposal has only been ratified by 2 out of the 6 Communauté Économique et Monétaire de l'Afrique Centrale (CEMAC) countries: Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, and Republic of Congo.

Appendix Table 1. Variable definitions and data sources

Variable	Definition	Source
Deposit Insurance	Dummy that equals 1 if the country has explicit deposit insurance (including blanket guarantees) and 0 if it has implicit deposit insurance.	Demirguc-Kunt and Laeven (2005)
Coverage ratio	Coverage limit of the EDIS in local currency divided by GDP per capita. Missing for countries with full coverage.	Demirguc-Kunt and Laeven (2005)
Coverage ratio adjusted for coinsurance	Coverage limit of the EDIS adjusted for coinsurance divided by GDP per capita. Missing for countries with full coverage.	Demirguc-Kunt and Laeven (2005)
Coinsurance	Maximum coinsurance percentage of the EDIS. Zero for countries with full coverage.	Demirguc-Kunt and Laeven (2005)
Coverage limit to deposits	Coverage limit of the EDIS in local currency divided by bank deposits per capita. Missing for countries with full coverage.	Demirguc-Kunt and Laeven (2005)
Moral hazard	Principal component of the variables coverage ratio, administration, membership, foreign deposits, interbank deposits, coinsurance, permanent fund, and funding. All variables are standardized with mean of zero and standard deviation of one before conducting the principal component analysis.	Authors' calculation
Moral hazard without coverage	Principal component of the variables administration, membership, foreign deposits, interbank deposits, coinsurance, permanent fund, and funding. All variables are standardized with mean of zero and standard deviation of one before conducting the principal component analysis.	Authors' calculation
Administration	Equals 0 if the administration of the EDIS is private or joint, 1 if it is public, and missing otherwise	Demirguc-Kunt and Laeven (2005)
Membership	Equals 0 if membership to the EDIS is compulsory to all banks, 1 if it is voluntary, and missing otherwise.	Demirguc-Kunt and Laeven (2005)
Foreign currency deposits	Equals 0 if foreign deposits are not covered by the EDIS, 1 if they are covered, and missing otherwise.	Demirguc-Kunt and Laeven (2005)
Interbank deposits	Equals 0 if interbank deposits are not covered by the EDIS, 1 if they are covered, and missing otherwise.	Demirguc-Kunt and Laeven (2005)
Coinsurance	Equals 0 if EDIS has coinsurance, 1 if it has no coinsurance, and missing otherwise.	Demirguc-Kunt and Laeven (2005)
Fund	Equals 0 if EDIS but no permanent fund,1 if permanent fund, and missing otherwise.	Demirguc-Kunt and Laeven (2005)
Funding	Equals 0 if source of funding of the EDIS is private or joint, 1 if it is public, and missing otherwise.	Demirguc-Kunt and Laeven (2005)

Variable	Definition	Source
Real Interest Rate	Real interest rate (in %) equals nominal interest rate minus inflation rate.	IFS (nominal interest rate is the treasury, discount or deposit rate depending on availability – lines 60c, 60, or 60l) and WDI (inflation rate is the change in the consumer price index)
Inflation	Inflation, GDP deflator (annual %).	WDI
GDP Growth	Real GDP growth rate (in %).	WDI
Credit Growth	Real private credit growth rate (divided by GDP deflator) (in %).	IFS (private credit is line 32d) and WDI (GDP deflator)
Terms-of-Trade Change	Percentage change in terms of trade.	WDI
GDP per capita	GDP per capita (constant 1995 thousands of US$).	WDI
External pressure	Dummy variable that takes a value of one for the years 1999 and onwards, the year 1999 being the year that the IMF endorsed deposit insurance by publishing a paper on best practices and guidelines in deposit insurance.	Garcia (2000)
World Bank Loan	Dummy variable that takes the value of one during and following the year that the World Bank started an adjustment lending program with the country for reforms to establish deposit insurance (in addition to possibly other objectives), and zero otherwise. This variable takes a value of one for the following countries and periods (between brackets): Albania (2002 and onwards), Bolivia (1998 and onwards), Bosnia-Herzegovina (1996 and onwards), Croatia (1995 and onwards), El Salvador (1996 and onwards), Jordan (1995 and onwards), Lithuania (1996 and onwards), Nicaragua (2000 and onwards), Poland (1993 and onwards), Romania (1996 and onwards), Russia (1997 and onwards), Ukraine (1998 and onwards).	World Bank (2004)
EU Directive	Dummy variable that takes a value of one for the years 1994 and onwards for EU member countries only (the EU-15), and zero otherwise. The year 1994 was the year when the EU Directive on Deposit Insurance came into force.	EU (1994)
EU Candidacy	Dummy variable that takes a value of one for the years 1994 and onwards for EU candidate countries only (i.e., Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia), and zero otherwise. The year 1994 was the year when the EU Directive on Deposit Insurance came into force.	EU (1994)
Emulation	Proportion of countries with explicit deposit insurance at a given year (in %).	Authors' calculation
Crisis Dummy	Systemic banking crisis dummy equals 1 if the country experiences a systemic crisis in that year and 0 otherwise from 1976 to October 2003.	Caprio, Klingebiel, Laeven and Noguera (2005)

Variable	Definition	Source
Post-crisis adoption	Equals 1 if DIS was adopted between 0 and 3 years following a crisis, and 0 otherwise	Caprio, Klingebiel, Laeven and Noguera (2005)
Fiscal cost / GDP	Fiscal cost of banking crisis resolution (as % of GDP), values reported during the crisis period and 0 otherwise	Caprio, Klingebiel, Laeven and Noguera (2005)
Gov. Ownership	Government ownership of banks in 1970 used for 1970 to 1994 and in 1995 onwards (in %).	La Porta, Lopez-de-Silanes, and Shleifer (2002)
Privatization	Bank privatization dummy equals 1 if first state-owned bank privatization took place.	Boehmer, Nash, and Netter (2003)
Bank deposits / GDP	Demand, time and saving deposits in deposit money banks as a share of GDP, calculated using the following deflation method: $\{(0.5)*[D_t/Pe_t + D_{t-1}/Pe_{t-1}]\}/[GDP_t/Pa_t]$, where D is demand and time and saving deposits, Pe is end-of period CPI, and Pa is average annual CPI, and t is year t.	Beck, Demirgüç-Kunt, and Levine (2003), Financial Structure Database. Raw data are from the electronic version of the IMF's International Financial Statistics (IFS lines 24 and 25). Data on GDP in local currency (lines 99) and annual CPI (line 64).
Polity Score	Index combining democracy and autocracy scores. It ranges from –10 to 10, where negative scores are assigned to countries under autocracies and positive values to countries under democracies and –10 and 10 are the extreme cases of these two systems. Autocracies sharply restrict or suppress competitive political participation. Their chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints. Democracy is conceived as three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation.	Polity IV, INSCR Program, CIDCM, University of Maryland, College Park
Executive Constraints	Index measuring the extent of institutionalized constraints on the decision-making powers of chief executives. Such limitations may be imposed by any accountability group. The index ranges from 1 to 7, where 1 represents unlimited authority and 7 Executive parity or subordination.	Polity IV, INSCR Program, CIDCM, University of Maryland, College Park
Political Competition	Index combining regulation of participation and competitiveness of participation scores. It ranges from 1 to 10, where higher scores represent more political competition. Participation is regulated to the extent that there are binding rules on when, whether, and how political preferences are expressed. One-party states and Western democracies both regulate participation but they do so in different ways, the former by channeling participation through a single party structure, with sharp limits on diversity of opinion; the latter by allowing relatively stable and enduring groups to compete nonviolently for political influence. The polar opposite is unregulated participation, in which there are no enduring national political organizations and	Polity IV, INSCR Program, CIDCM, University of Maryland, College Park

Variable	Definition	Source
	no effective regime controls on political activity. In such situations political competition is fluid and often characterized by recurring coercion among shifting coalitions of partisan groups. The competitiveness of participation refers to the extent to which alternative preferences for policy and leadership can be pursued in the political arena.	
Bureaucracy	Index measuring the institutional strength and quality of the bureaucracy. It ranges from 0 to 4. High points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.	International Country Risk Guide (ICRG)
Corruption	Index measuring the extent to which bribery is present within the political system. Forms of corruption considered are related to bribes in the areas of exchange controls, tax assessments, police protection, loans, and licensing of exports and imports. It ranges from 0 to 6, where low scores indicate high levels of corruption.	International Country Risk Guide (ICRG)
Dem. Accountability	Index measuring how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one. It ranges from 0 to 6, where 0 is assigned to autarchies and 6 to alternating democracies.	International Country Risk Guide (ICRG)
Law & Order	Index measuring a country's legal system and rule of law. It ranges from 0 to 6, where a high score indicates high level of law and order. Law and order are assessed separately, with each sub-component comprising zero to three points. The law sub-component is an assessment of the strength and impartiality of the legal system while the order sub-component is an assessment of popular observance of law.	International Country Risk Guide (ICRG)